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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/520,834

02/03/2005

Espen Olsen

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EXAMINER

LIAO, DIANA J

ART UNIT

PAPER NUMBER

4116

MAIL DATE

DELIVERY MODE

12/12/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/520,834	Applicant(s) OLSEN ET AL.	
	Examiner DIANA J. LIAO	Art Unit 4116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 03 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) 3-5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/6/2005, 5/17/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election acknowledged

1. During a telephone conversation with Don Lucas on 10/9/2007 a provisional election was made to prosecute the invention of I, claims 1-2. Affirmation of this election must be made by applicant in replying to this Office action. Claims 3-5 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Election/Restrictions

2. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1 and 2, drawn to a silicon nitride mould part.

Group II, claim(s) 3-5, drawn to a method for producing silicon nitride mould parts.

3. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Unity exists only when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding claimed technical features. The express "special technical features" is defined as meaning those technical features that define a contribution which each of the inventions, considered as a whole, makes over the prior art."(Rule 13.2). The question of unity of invention has been reconsidered retroactively by the examiner in view of the search performed; a review of

Art Unit: 4116

Takeuchi, et al. (US 5,618,765) makes clear that the claimed species is not novel over the prior art (the instantly claimed compounds). Furthermore, these references appear to demonstrate that the technical feature, a silicon nitride mould part, does not define a contribution which each of the inventions, considered as a whole, makes over the prior art. Thus, lack of unity becomes apparent “a posteriori” after taking the prior art into consideration. Accordingly, the prior art of the record supports restriction of the claimed subject matter in to the groups as mentioned immediately above.

The common technical feature shared by the two groups is a porous part comprising of silicon nitride with a high porosity. Takeuchi, et al. discloses a porous silicon nitride body from a powdered or grained silicon nitride source which has a porosity of at least 30% where the pore size is between 0.05 and 12µm (col2, lines 7-8) and the average grain size is 0.3µm (col 6, lines 55-57). The common technical feature is not expected to overcome prior art and therefore there is a lack of unity.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Rejoinder Practice

5. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are

subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Status of Application

6. Claims 1 and 2 are presented for examination. Claims 3-5 have been withdrawn due to being the provisionally non-elected species.

Priority

7. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 20023865 (Norway), filed on 8/15/2002.

Information Disclosure Statement

8. The information disclosure statement (IDS) were submitted on 1/6/2005 and 5/17/2005. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi, et al. (US 5,618,765) in view of Kriegesmann (US Pub No 2003/0176271).

Regarding claim 1, Takeuchi, et al. teaches a ceramic porous body comprising of silicon nitride. The ceramic material is disclosed for possible uses as a filter or catalyst carrier in corrosive or high temperature environments. (col 17, lines 20-22) One disclosed product of their invention outlined in Table 1 contains no additive ("No. 1") has a porosity of 60% and a mean pore size of 0.5 μm . (See col 7 and 8 for Table 1) The grains used for this ceramic's production had a mean size of 0.3 μm . (col 6, lines 54-58) The mean pore size is greater than the mean size of the particles used. Regarding claim 2, since the entire product is made of particles with a mean size less than 50 μm , the product is inherently also coated with particles of less than 50 μm .

However, Takeuchi, et al. does not teach the porosity to be the open porosity, and also does not teach mould parts made from the silicon nitride.

It would have been obvious to one of ordinary skill in the art to produce mould parts from the ceramic product of Takeuchi, et al. in view of Kriegesmann.

Kriegesmann teaches molded bodies made from silicon nitride. The product of the invention is to be possibly used for kiln furniture or heating elements. (paragraph 0004). A mould part is considered to be a heating element or kiln furniture because it is most often used under high temperatures. One would be motivated to use this material for a mould part because of its excellent performance at high temperatures and low thermal expansion. (paragraph 0008) This would improve durability of the mould part.

Regarding the open porosity, although the prior art is silent as to the property, it is found to be most likely inherent or obvious given Takeuchi, et al. The porosity of the product in Takeuchi et al. is at 60%, which is at the higher end of the porosity range of the instant claims. Even if some of the pores are closed, the open porosity is probably within the 40-60% range. In addition, the product of Takeuchi, et al. is taught to be possibly used as a filter or catalyst carrier, which would primarily utilize open porosity to allow for fluid passage or for catalyst deposition. Takeuchi, et al. is assumed to at least be primarily referring to open porosity if not completely referring to open porosity when it mentions the porosity.

The portion of claim 1 reciting the mould part's usage as a crucible for directional solidification and pulling of silicon single crystals is not given patentable weight for this product/apparatus claim. However, the examiner would like to note Matsuo, et al. (US 4,515,755), which was submitted in the IDS, as a relevant reference not relied upon in this rejection as art that may read on that subject matter.

Therefore, claims 1 and 2 are not found patentable over the prior art.

Conclusion

Claims 1 and 2 have been rejected. No claims have been allowed. Claims 3-5 have been withdrawn due to being the non-elected invention and were not examined.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIANA J. LIAO whose telephone number is (571)270-

Art Unit: 4116

3592. The examiner can normally be reached on Monday - Friday 8:00am to 5:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on 571-272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJL

/Vickie Kim/
Supervisory Patent Examiner, Art Unit 4116